UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/059,745	01/28/2002	Alain Shang	3918P003	5347

8791 7590 06/01/2004

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

EXAMINER	
SONG, SARAH U	

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 06/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/059,745	SHANG ET AL.	
	Examiner	Art Unit	
	Sarah Song	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-64,93-118 and 131-153* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *102-104* is/are allowed.

6)☒ Claim(s) *1-35,43,46-48,54-64,93-101,105-109,111-118 and 131-153* is/are rejected.

7)☒ Claim(s) *36-42,44,45,49-53 and 110* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 January 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1203,0204 and 0204*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 65-92 and 119-130 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 0204.

Response to Amendment

2. Applicant's communication filed on February 17, 2004 has been carefully considered and placed of record in the file. Claims 65-92 and 119-130 have been canceled. Claims 53, 54, 59, 61-63 and 114 have been amended. New claims 131-153 have been added. Claims 1-64, 93-118 and 131-153 are pending.

Information Disclosure Statement

3. The prior art documents submitted by the applicant in the Information Disclosure Statements filed on December 1, 2003, February 12, 2004 and February 17, 2004 have all been considered and made of record (note the attached copies of forms PTO-1449).

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 21f, 26 and 2002. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

6. Claim 42 is objected to because of the following informalities: "the elastomer" lacks proper antecedent basis. Examiner suggests amending the claim to depend from claim 36 or 37 to provide proper antecedent basis for the limitation. Appropriate correction is required.

7. Claim 114 is objected to because of the following informalities: "the one or more module contacts" lacks proper antecedent basis. Examiner suggests amending the claim to depend from claim 112 to provide proper antecedent basis for the limitation. Appropriate correction is required.

8. Claim 138 is objected to because of the following informalities: "the compressible interposer" lacks proper antecedent basis. Examiner suggests amending the claim to depend from claim 132 to provide proper antecedent basis for the limitation. Appropriate correction is required.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. **Claims 34, 35 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Kayner (U.S. Patent 5,767,999).**

11. Regarding claim 34, Kayner discloses a fiber optic module 10 comprising:

- one or more optoelectronic devices 16 and 18 to convert electrical signals into optical signals or to convert optical signals into electrical signals or both;
- a first guide slot 48 to receive a first guide tab 94 of a receptacle 12 and to guide the fiber optic module into the receptacle; and
- a first stop slot (portion of slot 48 proximate fiber optic receptacles 46 and additionally comprising spring latch 40) integral with the first guide slot, the first stop slot to receive the first guide tab and to stop further insertion of the fiber optic module into the receptacle.

12. Regarding claim 35, the first guide tab is engaged with the first stop slot by a force of a spring 40 in the receptacle.

13. Regarding claim 43, the guiding structures are disclosed to be on a first and second side of the module, the first side opposite the second side, and each side comprising the guide slots (see Figure 2 which more clearly shows the equivalent structures of the first and second sides). That is, the fiber optic module is disclosed wherein the first guide slot and the first stop slot are in a first side of the fiber optic module, and the fiber optic module further comprises a second guide slot to receive a second guide tab of the receptacle, and a second stop slot integral with the second guide slot, the second stop slot to receive the second guide tab and to stop further

insertion of the fiber optic module into the receptacle; wherein the second guide slot and the second stop slot are in a second side of the fiber optic module opposite the first side.

14. **Claims 46-48 are rejected under 35 U.S.C. 102(b) as being anticipated by Kayner.**

15. Regarding claims 46 and 48, Kayner discloses:

- one or more optoelectronic devices 16 and 18;
- a housing 10, the housing including a first guide tab and a second guide tab 40 (left side not shown);
- the first guide tab to engage a first slot (comprising stop slot 106 and extending rearward; see Figure 3A);
- the second guide tab to engage a second slot (corresponding structure to first slot but on opposite side).

16. Regarding claim 47, note stop slots 106. It is additionally noted that tabs 40 engage stop slots by its own spring force in the receptacle.

17. **Claims 105-107 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (U.S. Patent Application Publication 2003/0091301).**

18. Regarding claim 105, Lee et al. discloses a system comprising:

- a fiber optic module including an optical connector 200, one or more optoelectronic devices 124, a housing 145, a guide tab coupled to the side of the housing (portion proximate groove 141 and integral with the housing, and thus coupled with housing);
- a module receptacle including a cage (defined by 180), and a guide rail (short side portions of 180), a spring (top portion of 180), the spring to apply a force to a top of the housing of the fiber optic module (see paragraph [0053] and [0054]).

19. Regarding claim 106, Lee et al. further discloses one or more module contacts 202 and an elastomer 148, and an electrical connector (165) having one or more host contacts 166. The spring applies sufficient force to the top of the housing to compress the elastomer and form electrical connections between the module contacts and the host contacts (see paragraph [0053] and [0054]).

20. Regarding claim 107, the contacts 202 and 166 are elongated pads.

21. **Claims 111, 116 and 117 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al.**

22. Regarding claim 111, Lee et al. discloses a system comprising:

- a fiber optic module including:
  - an optical connector 200,
  - one or more optoelectronic devices 124 to convert between optical signals and electrical signals,
  - a housing 145 to cover the one or more optoelectronic devices, and
  - a retention stop 171 coupled to the housing;
- an electrical connector (e.g. 110 or 806, see also paragraph [0049]) coupled to a host printed circuit board 165; and
- a retention mechanism (upper arm of the electrical connector) to couple to the electrical connector at one end, the retention mechanism having a spring latch 181 at an opposite end to couple to the retention stop of the fiber optic module.

23. Regarding claim 116, Lee et al. further discloses one or more guide rails (opposing side portions of the electrical connector) to guide the fiber optic module toward the electrical

connector and to engage (i.e. connect with) the retention mechanism (upper arm of the electrical connector).

24. Regarding claim 117, the fiber optic module further includes one or more guide tabs (protruding short side portion of the proximate grooves 141) to engage the one or more guide rails.

25. **Claims 131, 136-138 and 143 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al.**

26. Regarding claim 131, Lee et al. discloses a fiber optic module comprising:

- a base 143;
- one or more optical fiber connectors 200 coupled to the base, the one or more optical fiber connectors to couple to one or more optical fibers 136;
- one or more opto-electronic devices 124 coupled to the base in alignment with the one or more optical fiber connectors (see Figure 5), the one or more opto-electronic devices to convert between optical signals and electrical signals (see paragraph [0027]); and
- an array of pads 202 coupled to the base (via housing 145), the array of pads to provide a parallel data connection with a host printed circuit board (see paragraph [0052]).

27. Regarding claim 136, the fiber optic module further comprises a housing 145 coupled to the base 143 (see Figures 5 and 7).

28. Regarding claim 137, Lee et al. additionally discloses a retention stop 171 coupled to the housing, the retention stop to couple to a latch 181 of a module receptacle to retain the fiber optic module therein.

29. Regarding claim 138, the housing has a compression stop (the bottom surface of housing 145) coupled to the base to avoid over-compression of the compressible interposer. See Figure 7.

30. Regarding claim 143, paragraph [0050] discloses that the array of pads is electrically coupled to the one or more opto-electronic devices.

Claim Rejections - 35 USC § 103

31. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

32. **Claims 1-11 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer (U.S. Patent 3,795,037).**

33. Regarding claims 1, 3 and 4, Lee et al. discloses a fiber optic module comprising:

- one or more electro-optic transducers 124 to convert optical signals into electrical signals or electrical signals into optical signals (see paragraph [0027]);
- a plurality of module contacts 202 to couple electrical signals to the one or more electro-optic transducers or to receive electrical signals from the one or more electro-optic transducers, the plurality of module contacts to couple electrical signals into a host printed circuit board 165 or to receive electrical signals from the host printed circuit board (see paragraph [0052]); and

- an elastomer 148 to couple between host contacts 166 electrically coupled to the host printed circuit board and the plurality of module contacts 202, the elastomer to couple electrical signals between the host printed circuit board and the fiber optic module (see paragraph [0052] and [0056]).

34. Lee et al. additionally discloses that the elastomer has a "stacked interval" of silicon rubber and conductor having a pitch of about 100μm (see paragraph [0052]), but does not expressly disclose that the elastomer comprises spaced apart conductors, does not specifically disclose the spaced apart conductors of the elastomer to be micro-filaments or metal columns, and also does not disclose the conductors to be compressible.

35. Luttmer discloses an elastomeric connector comprising alternating layers of an elastomeric insulating material 21 and conductive resilient material 10 such as phosphor bronze (a metal). That is, Luttmer discloses an elastomeric connector comprising spaced apart conductors. The conductive members are micro-filaments or metal columns having a cross-sectional dimension of about 25μm and a length of about 2 mm (see column 2, lines 58-67). The conductive members are also resilient, and therefore are compressible (see column 3, lines 25-30), as is the elastomer. Furthermore, since the conductors of the elastomer are spaced apart, the elastomer also couples the various contacts of the module and the host without shorting to each other.

36. Lee et al. and Luttmer are analogous art because they are from the same field of endeavor, that is, the elastomeric electrical connectors.

37. Since both disclosures relate to elastomeric connectors for establishing electrical contact, it would have been obvious to one having ordinary skill in the art at the time of the invention to replace the elastomeric connector of Lee et al. with the elastomeric connector of Luttmer.

38. One of ordinary skill in the art would have been motivated to make the modification in order to relax the manufacturing tolerances for the conductive portions of the connector (see column 3, lines 25-35), which would result in reduced manufacturing costs and production times. Therefore, it would have been obvious to combine Luttmer with Lee et al. to obtain the invention as specified in claims 1, 3, 4, and 22.

39. Regarding claim 2, since the elastomer of Lee et al. is interposed between the module contacts and the host contacts, the elastomer of Lee et al. is an interposer.

40. Regarding claim 5, Lee et al. discloses a compression stop (bottom surface of housing 145; see figure 7) to avoid over-compression of the elastomer.

41. Regarding claim 6, Lee et al. discloses a housing 145 to house the one or more electro-optic transducers 124 and the module contacts 202 and to provide external access thereto (see Figure 5).

42. Regarding claim 7, the housing 145 is shielded by metal cover 150. See also paragraph [0041].

43. Regarding claim 8, the housing 145 has a module retention stop (latch groove 171) to couple to a latch 181 of a module receptacle 180 of the host printed circuit board 165 and hold the fiber optic module engaged within.

44. Regarding claims 9-11, the housing has a compression stop (the bottom surface of housing 145) to contact a surface (top surface of PCB 165) to avoid over-compression of the

elastomer. The top surface of PCB 165 also constitutes an inner surface of a back-side (wherein the PCB 165 is coincident with a back side) of a module receptacle of the host printed circuit board. See Figure 7.

45. Regarding claims 19 and 22, it is noted that the elastomeric connector 148 is compressible, since all elastomers are compressible.

46. Regarding claim 20, the host contacts 166 are mechanically and electrically coupled to the host printed circuit board as can be seen from Figures 5-7.

47. Regarding claim 21, Figures 1, 5, 6 and 8 show that the host contacts 166 are part of an electrical connector 180, the electrical connector mechanically and electrically coupled to the host printed circuit board 165.

48. **Claims 24, 25 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer.**

49. Regarding claims 24 and 30-33, Lee et al. discloses a fiber optic module comprising:

- means 124 for converting optical signals into electrical signals or electrical signals into optical signals (see paragraph [0027]);
- means 202 for coupling electrical signals into and out of the means for converting optical signals into electrical signals (see paragraph [0052]); and
- a compression means 148 to couple between the means for coupling electrical signals into and out of the means for converting optical signals into electrical signals and a means 166 for coupling electrical signals into and out of a host printed circuit board 165 (see paragraph [0052] and [0056]).

50. Lee et al. additionally discloses that the elastomer has a "stacked interval" of silicon rubber and conductor having a pitch of about 100μm (see paragraph [0052]), but does not expressly disclose that the elastomer comprises spaced apart conductors, does not specifically disclose the spaced apart conductors of the elastomer to be micro-filaments or metal columns, and also does not disclose the conductors to be compressible. Lee et al. does not disclose the compression means to have an anisotropic electrically conductive elastomer.

51. Luttmer discloses an elastomeric connector comprising alternating layers of an elastomeric insulating material 21 and conductive resilient material 10 such as phosphor bronze (a metal). That is, Luttmer discloses an elastomeric connector comprising spaced apart conductors. The conductive members are micro-filaments or metal columns having a cross-sectional dimension of about 25μm and a length of about 2 mm (see column 2, lines 58-67). The conductive members are also resilient, and therefore are compressible (see column 3, lines 25-30), as is the elastomer. Luttmer further discloses the elastomer to be anistropically electrically conductive (see column 4, lines 23-31). Furthermore, since the conductors of the elastomer are spaced apart, the elastomer also couples the various contacts of the module and the host without shorting to each other.

52. Lee et al. and Luttmer are analogous art because they are from the same field of endeavor, that is, the elastomeric electrical connectors.

53. Since both disclosures relate to elastomeric connectors for establishing electrical contact, it would have been obvious to one having ordinary skill in the art at the time of the invention to replace the elastomeric connector of Lee et al. with the elastomeric connector of Luttmer.

54. One of ordinary skill in the art would have been motivated to make the modification in order to relax the manufacturing tolerances for the conductive portions of the connector (see column 3, lines 25-35), which would result in reduced manufacturing costs and production times. Therefore, it would have been obvious to combine Luttmer with Lee et al. to obtain the invention as specified in claims 24 and 30-33.

55. Regarding claim 25, the means 124 is one or more electro-optic transducers (see paragraph [0027]).

56. **Claims 54-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer.**

57. Regarding claims 54, 56 and 57, Lee et al. discloses a fiber optic module comprising:

- a housing 145;
- one or more opto-electronic devices 124 in the housing to convert between optical signals and electrical signals;
- a plurality of signal contacts 202 to couple electrical signals to the one or more opto-electronic devices or to receive electrical signals from the one or more opto-electronic devices;
- an elastomer 148 to couple to the plurality of signal contacts; and
- a retention stop 171 coupled to the housing, the retention stop to couple to a latch 181 of a module receptacle to retain the fiber optic module therein.

58. Lee et al. additionally discloses that the elastomer has a "stacked interval" of silicon rubber and conductor having a pitch of about 100μm (see paragraph [0052]), but does not expressly disclose that the elastomer comprises spaced apart conductors, does not specifically

disclose the spaced apart conductors of the elastomer to be micro-filaments or metal columns, and also does not disclose the conductors to be compressible.

59. Luttmer discloses an elastomeric connector comprising alternating layers of an elastomeric insulating material 21 and conductive resilient material 10 such as phosphor bronze (a metal). That is, Luttmer discloses an elastomeric connector comprising spaced apart conductors. The conductive members are micro-filaments or metal columns having a cross-sectional dimension of about 25μm and a length of about 2 mm (see column 2, lines 58-67). The conductive members are also resilient, and therefore are compressible (see column 3, lines 25-30), as is the elastomer. Furthermore, since the conductors of the elastomer are spaced apart, the elastomer also couples the various contacts of the module and the host without shorting to each other.

60. Lee et al. and Luttmer are analogous art because they are from the same field of endeavor, that is, the elastomeric electrical connectors.

61. Since both disclosures relate to elastomeric connectors for establishing electrical contact, it would have been obvious to one having ordinary skill in the art at the time of the invention to replace the elastomeric connector of Lee et al. with the elastomeric connector of Luttmer.

62. One of ordinary skill in the art would have been motivated to make the modification in order to relax the manufacturing tolerances for the conductive portions of the connector (see column 3, lines 25-35), which would result in reduced manufacturing costs and production times. Therefore, it would have been obvious to combine Luttmer with Lee et al. to obtain the invention as specified in claims 54, 56 and 57.

63. Regarding claim 55, since the elastomer of Lee et al. is interposed between the signal contacts 202 and the host contacts 166, the elastomer of Lee et al. is an interposer.

64. Regarding claim 58, the housing has a compression stop (the bottom surface of housing 145) to contact a surface (top surface of PCB 165) to avoid over-compression of the elastomer. See Figure 7.

65. Regarding claim 59, the housing provides external access to the plurality of signal contacts, as seen in Figure 5.

66. Regarding claim 60, the housing 145 is shielded by metal cover 150 to reduce electro-magnetic interference. See also paragraph [0041].

67. **Claims 93 and 96 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al.**

68. Regarding claim 93, Lee et al. discloses a fiber optic module electrically connected to a host system (Figure 7), but does not expressly disclose the method of making electrical contact, the method comprising:

- inserting the fiber optic module having module contacts and an elastomer into a cage;
- applying a force to the fiber optic module to compress the elastomer and form electrical connections (see paragraphs [0051] through [0054], which describes that the elastomeric connector makes electrical connections by pressing conductors on both sides of the elastomeric connector, i.e. by applying pressure to compress the elastomer); and
- stopping the compression of the elastomer (via bottom surface of housing 145, which stops compression of the elastomer by abutting top surface of PCB 165).

69. However, since Lee et al. shows the fiber optic module inserted into the cage (defined by 180), the fiber optic module having contacts 202 and an elastomer 148, the method step of "inserting" would have been obvious to one having ordinary skill in the art at the time the invention was made in order to arrive at the final structure of Lee et al. shown in Figure 7.

70. Furthermore, since Lee et al. discloses that electrical contact is achieved by close contact with the elastomeric connector by spring action (paragraph [0054]) and that elastomeric connectors achieve electrical connection by pressing on the sides of the connector (paragraph [0051]), the step of "applying a force" would have been obvious to one having ordinary skill in the art as being equivalent to the step of "pressing".

71. Finally, Lee et al. discloses the elastomer to initially extend beyond the boundary of the bottom side of the housing 145 (paragraph [0052]), and then shows the elastomer being even with the bottom side of the housing 145 (Figure 7), it would have been obvious to one having ordinary skill in the art at the time the invention was made that the bottom surface of the housing 145 functions to stop compression of the elastomer. Therefore, the step of "stopping the compression of the elastomer" would have been obvious to one of ordinary skill in the art to arrive at the final structure shown by Lee et al. in Figure 7.

72. Regarding claim 96, Lee et al. further discloses the step of retaining the fiber optic module in position to maintain compression of the elastomer and the electrical connections in paragraph [0054] (i.e. "holder 180 secures an electrical contact through a close contact with elastomeric connector 148 by spring action.").

73. **Claim 94 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer.**

74. Regarding claim 94, Lee et al. discloses the claimed method except for the elastomer having spaced apart conductors.

75. Luttmer discloses an elastomeric connector comprising alternating layers of an elastomeric insulating material 21 and conductive resilient material 10 such as phosphor bronze (a metal). That is, Luttmer discloses an elastomeric connector comprising spaced apart conductors. The conductive members are micro-filaments or metal columns having a cross-sectional dimension of about 25μm and a length of about 2 mm (see column 2, lines 58-67). The conductive members are also resilient, and therefore are compressible (see column 3, lines 25-30), as is the elastomer. Furthermore, since the conductors of the elastomer are spaced apart, the elastomer also couples the various contacts of the module and the host without shorting to each other.

76. Lee et al. and Luttmer are analogous art because they are from the same field of endeavor, that is, the elastomeric electrical connectors.

77. Since both disclosures relate to elastomeric connectors for establishing electrical contact, it would have been obvious to one having ordinary skill in the art at the time of the invention to replace the elastomeric connector of Lee et al. with the elastomeric connector of Luttmer.

78. One of ordinary skill in the art would have been motivated to make the modification in order to relax the manufacturing tolerances for the conductive portions of the connector (see column 3, lines 25-35), which would result in reduced manufacturing costs and production times. Therefore, it would have been obvious to combine Luttmer with Lee et al. to obtain the invention as specified in claim 94.

79. **Claims 97, 99-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al.**

80. Regarding claim 97, Lee et al. discloses a fiber optic module in a host system, but does not expressly disclose method steps for engaging the fiber optic module into the host system.

81. However, since Lee et al. shows the fiber optic module engaged into the host system (defined by 180 and PCB 165), the fiber optic module having a guide tab (side portions proximate groove 141) engaged with a guide rail (short side portions 181), the method steps of "engaging" and "sliding" would have been obvious to one having ordinary skill in the art at the time the invention was made in order to arrive at the final structure of Lee et al. shown in Figure 7.

82. It is noted that the guide tab is engaged to a stop (detent of side portion of 181), and thus the step of "engaging the guide tab into a stop" would also have been obvious to one having ordinary skill in the art at the time the invention was made in order to arrive at the final structure of Lee et al. shown in Figure 7.

83. Furthermore, since Lee et al. discloses that electrical contact is achieved by close contact with the elastomeric connector by spring action (paragraph [0054]) and that elastomeric connectors achieve electrical connection by pressing on the sides of the connector (paragraph [0051]), the step of "applying a force" would have been obvious to one having ordinary skill in the art as being equivalent to the step of "pressing".

84. Regarding claim 99, since Lee et al. discloses that electrical contact is achieved by close contact with the elastomeric connector by spring action (paragraph [0054]) and that elastomeric connectors achieve electrical connection by pressing the conductors (contacts) on the sides of the

connector (paragraph [0051]), the step of "compressing an elastomer between [contacts]" would have been obvious to one having ordinary skill in the art as being equivalent to the step of "pressing" conductors on the sides of the elastomer.

85. Regarding claim 100, the host contacts 166 are coupled to the host printed circuit board 165 as shown in Figure 7.

86. Regarding claim 101, the host contacts 166 are part of an electrical connector 180 coupled to a host printed circuit board.

87. **Claims 112, 113 and 115 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. as applied to claim 111 above, and further in view of Luttmer.**

88. Regarding claim 112, Lee et al. discloses the claimed invention, and additionally discloses

- one or more module contacts 202, and
- an elastomer 148, the elastomer being compressible (inherent);and
- one or more host contacts 166 to make electrical connections with the one or more module contacts through the elastomer (see paragraph [0052] and [0056]).

89. Lee et al. additionally discloses that the elastomer has a "stacked interval" of silicon rubber and conductor having a pitch of about 100μm (see paragraph [0052]), but does not expressly disclose that the elastomer comprises spaced apart conductors.

90. Luttmer discloses an elastomeric connector comprising alternating layers of an elastomeric insulating material 21 and conductive resilient material 10 such as phosphor bronze (a metal). Furthermore, since the conductors of the elastomer are spaced apart, the elastomer also couples the various contacts of the module and the host without shorting to each other.

91. Lee et al. and Luttmer are analogous art because they are from the same field of endeavor, that is, the elastomeric electrical connectors.

92. Since both disclosures relate to elastomeric connectors for establishing electrical contact, it would have been obvious to one having ordinary skill in the art at the time of the invention to replace the elastomeric connector of Lee et al. with the elastomeric connector of Luttmer. One of ordinary skill in the art would have been motivated to make the modification in order to relax the manufacturing tolerances for the conductive portions of the connector (see column 3, lines 25-35), which would result in reduced manufacturing costs and production times. Therefore, it would have been obvious to combine Luttmer with Lee et al. to obtain the invention as specified in claim 112.

93. Regarding claim 113, it is noted that the contacts 202 and 166 are elongated pads.

94. Regarding claim 115, Lee et al. discloses a compression stop (bottom surface of housing 145; see figure 7) to avoid over-compression of the elastomer.

95. **Claims 132-135 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. as applied to claim 131 above, and further in view of Luttmer.**

96. Regarding claims 132-135, the fiber optical module of Lee et al. further comprises a compressible interposer (elastomer) 148 coupled to the array of pads. Lee et al. additionally discloses that the elastomer has a "stacked interval" of silicon rubber and conductor having a pitch of about 100μm (see paragraph [0052]), but does not expressly disclose that the elastomer comprises spaced apart conductors, does not specifically disclose the spaced apart conductors of the elastomer to be micro-filaments or metal columns.

97. Luttmer discloses an elastomeric connector comprising alternating layers of an elastomeric insulating material 21 and conductive resilient material 10 such as phosphor bronze (a metal). That is, Luttmer discloses an elastomeric connector comprising spaced apart conductors. The conductive members are micro-filaments or metal columns having a cross-sectional dimension of about 25μm and a length of about 2 mm (see column 2, lines 58-67). Furthermore, since the conductors of the elastomer are spaced apart, the elastomer also couples the various contacts of the module and the host without shorting to each other.

98. Lee et al. and Luttmer are analogous art because they are from the same field of endeavor, that is, the elastomeric electrical connectors.

99. Since both disclosures relate to elastomeric connectors for establishing electrical contact, it would have been obvious to one having ordinary skill in the art at the time of the invention to replace the elastomeric connector of Lee et al. with the elastomeric connector of Luttmer.

100. One of ordinary skill in the art would have been motivated to make the modification in order to relax the manufacturing tolerances for the conductive portions of the connector (see column 3, lines 25-35), which would result in reduced manufacturing costs and production times. Therefore, it would have been obvious to combine Luttmer with Lee et al. to obtain the invention as specified in claims 132-135

101. **Claims 144-148 and 153 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer.**

102. Regarding claims 144, 146 and 147, Lee et al. discloses a fiber optic module comprising:

- a housing 145

- one or more optical fiber connectors 200 extending from a front of the housing, the one or more optical fiber connectors to couple to one or more optical fibers 136;
- one or more opto-electronic devices 124 mounted in the housing, the one or more opto-electronic devices to convert between optical signals and electrical signals (see paragraph [0027]); and
- an array of pads 202 extending from the housing, the array of pads to provide a parallel data connection with a host printed circuit board (see paragraph [0052]).

103. Lee et al. also discloses a compressible interposer (elastomer) 148 to couple to the fiber optic module. Lee et al. additionally discloses that the elastomer has a "stacked interval" of silicon rubber and conductor having a pitch of about 100μm (see paragraph [0052]). Lee et al. discloses the claimed invention as discussed above, but does not expressly disclose that the elastomer comprises spaced apart conductors, does not specifically disclose the spaced apart conductors of the elastomer to be micro-filaments or metal columns, and also does not disclose the conductors to be compressible.

104. Luttmer discloses an elastomeric connector comprising alternating layers of an elastomeric insulating material 21 and conductive resilient material 10 such as phosphor bronze (a metal). That is, Luttmer discloses an elastomeric connector comprising spaced apart conductors. The conductive members are micro-filaments or metal columns having a cross-sectional dimension of about 25μm and a length of about 2 mm (see column 2, lines 58-67). The conductive members are also resilient, and therefore are compressible (see column 3, lines 25-30), as is the elastomer. Furthermore, since the conductors of the elastomer are spaced apart, the

elastomer also couples the various contacts of the module and the host without shorting to each other.

105. Lee et al. and Luttmer are analogous art because they are from the same field of endeavor, that is, the elastomeric electrical connectors.

106. Since both disclosures relate to elastomeric connectors for establishing electrical contact, it would have been obvious to one having ordinary skill in the art at the time of the invention to replace the elastomeric connector of Lee et al. with the elastomeric connector of Luttmer.

107. One of ordinary skill in the art would have been motivated to make the modification in order to relax the manufacturing tolerances for the conductive portions of the connector (see column 3, lines 25-35), which would result in reduced manufacturing costs and production times. Therefore, it would have been obvious to combine Luttmer with Lee et al. to obtain the invention as specified in claims 144, 146 and 147.

108. Regarding claim 145, Lee et al. additionally discloses a retention stop 171 coupled to the housing, the retention stop to couple to a latch 181 of a module receptacle to retain the fiber optic module therein.

109. Regarding claim 148, the housing has a compression stop (the bottom surface of housing 145) coupled (i.e. integrally attached) to the housing to avoid over-compression of the compressible interposer. See Figure 7.

110. Regarding claim 153, paragraph [0050] discloses that the array of pads is electrically coupled to the one or more opto-electronic devices.

111. **Claims 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer as applied to claim 1 above, and further in view of Berg et al. (U.S. Patent 5,980,324).**

112. Regarding claims 12-18, Lee et al. discloses the claimed invention except for a means to provide sequential electrical connections/disconnections, the means comprising a ground pin/pad and a power pin/pad, the ground pin/pad extending beyond (thicker than) the power pin/pad and the power pin/pad extending beyond (thicker than) the signal pins/pads.

113. Berg et al. discloses ground pads and power pads/pins 60 as a means to provide sequential electrical connections during physical insertion of the fiber optic module (see column 5, line 62 through column 6, line 34; Figure 8). It is noted that during physical removal of the module, sequential disconnections occur in the reverse order as the connections. It is also noted that pins and pads are art recognized functional equivalents; the selection of either of these known equivalents would have been within the level of ordinary skill in the art. Berg et al. also discloses that the ground signal is connected first; therefore the ground pads/pins are the longest/thickest since Berg et al. also states that the longest pads make contact first. Likewise, Berg et al. discloses that the power signal is connected second; therefore, the power pads/pins are shorter/thinner that the ground pads/pins. Furthermore, Berg et al. discloses that the data signal is connected last; therefore, the signal pads/pins are shortest/thinnest.

114. Lee et al. and Berg et al. are analogous art because they are from the same field of endeavor, that is, optical transceivers.

115. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the means to provide sequential connection/disconnection of Berg et al. with Lee et al.

116. The motivation for doing so would have been to enable an operator to connect or disconnect the transceiver from the host device without having to remove power from the host device and thus simplifying operation of the device.

117. **Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer as applied to claim 24 above, and further in view of Berg et al.**

118. Regarding claims 26-29, Lee et al. discloses the claimed invention except for a means to provide sequential electrical connections/disconnections, the means comprising a ground pin/pad, and a power pin/pad.

119. Berg et al. discloses ground pads and power pads/pins 60 as a means to provide sequential electrical connections during physical insertion of the fiber optic module (see column 5, line 62 through column 6, line 34; Figure 8). It is noted that during physical removal of the module, sequential disconnections occur in the reverse order as the connections. It is also noted that pins and pads are art recognized functional equivalents; the selection of either of these known equivalents would have been within the level of ordinary skill in the art.

120. Lee et al. and Berg et al. are analogous art because they are from the same field of endeavor, that is, optical transceivers.

121. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the means to provide sequential connection/disconnection of Berg et al. with Lee et al.

122. The motivation for doing so would have been to enable an operator to connect or disconnect the transceiver from the host device without having to remove power from the host device and thus simplifying operation of the device.

123. **Claims 61-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer as applied to claim 54 above, and further in view of Berg et al.**

124. Regarding claims 61-63, Lee et al. discloses the claimed invention except for a power contact and a ground contact to provide sequential electrical connections/disconnections, the ground contact and power contact comprising respectively a ground pin/pad and a power pin/pad, the ground pin/pad extending beyond (thicker than) the power pin/pad and the power pin/pad extending beyond (thicker than) the signal pins/pads.

125. Berg et al. discloses ground pads and power pads/pins 60 as a means to provide sequential electrical connections during physical insertion of the fiber optic module (see column 5, line 62 through column 6, line 34; Figure 8). It is noted that during physical removal of the module, sequential disconnections occur in the reverse order as the connections. It is also noted that pins and pads are art recognized functional equivalents; the selection of either of these known equivalents would have been within the level of ordinary skill in the art. Berg et al. also discloses that the ground signal is connected first; therefore the ground pads/pins are the longest/thickest since Berg et al. also states that the longest pads are make contact first. Likewise, Berg et al. discloses that the power signal is connected second; therefore, the power pads/pins are shorter/thinner that the ground pads/pins. Furthermore, Berg et al. discloses that the data signal is connected last; therefore, the signal pads/pins are shortest/thinnest.

126. Lee et al. and Berg et al. are analogous art because they are from the same field of endeavor, that is, optical transceivers.

127. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the means to provide sequential connection/disconnection of Berg et al. with Lee et al.

128. The motivation for doing so would have been to enable an operator to connect or disconnect the transceiver from the host device without having to remove power from the host device and thus simplifying operation of the device.

129. **Claim 95 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. as applied to claim 93 above, and further in view of Berg et al.**

130. Regarding claim 95, Lee et al. discloses the claimed invention except for the steps of making a ground electrical connection and a power electrical connection prior to applying the force.

131. Berg et al. discloses the steps of establishing a ground electrical connection and a power electrical connection prior to the step of making the data signal connections (i.e. prior to applying the force in Lee et al.) (see column 5, line 62 through column 6, line 34).

132. Lee et al. and Berg et al. are analogous art because they are from the same field of endeavor, that is, optical transceivers.

133. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include the steps of providing a ground connection and a power connection of Berg et al. prior to applying the force of Lee et al.

134. The motivation for doing so would have been to enable an operator to connect or disconnect the transceiver from the host device without having to remove power from the host device and thus simplifying operation of the device.

135. **Claims 108 and 109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. as applied to claim 106 above, and further in view of Berg et al.** Regarding claims 108 and 109, Lee et al. discloses the claimed invention except for a ground contact and a power contact to provide sequential electrical connections/disconnections, the ground contact and power contact respectively comprising a ground pin/pad and a power pin/pad, the ground pin/pad extending beyond (thicker than) the power pin/pad and the power pin/pad extending beyond (thicker than) the module pins/pads.

136. Berg et al. discloses ground pads and power pads/pins 60 as a means to provide sequential electrical connections during physical insertion of the fiber optic module (see column 5, line 62 through column 6, line 34; Figure 8). It is noted that during physical removal of the module, sequential disconnections occur in the reverse order as the connections. It is also noted that pins and pads are art recognized functional equivalents; the selection of either of these known equivalents would have been within the level of ordinary skill in the art. Berg et al. also discloses that the ground signal is connected first; therefore the ground pads/pins are the longest/thickest since Berg et al. also states that the longest pads are make contact first. Likewise, Berg et al. discloses that the power signal is connected second; therefore, the power pads/pins are shorter/thinner that the ground pads/pins. Furthermore, Berg et al. discloses that the data signal is connected last; therefore, the module pads/pins are shortest/thinnest.

137. Lee et al. and Berg et al. are analogous art because they are from the same field of endeavor, that is, optical transceivers.

138. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the means to provide sequential connection/disconnection of Berg et al. with Lee et al.

139. The motivation for doing so would have been to enable an operator to connect or disconnect the transceiver from the host device without having to remove power from the host device and thus simplifying operation of the device.

140. **Claim 114 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. as applied to claim 111 above, and further in view of Berg et al.**

141. Regarding claim 114, Lee et al. discloses the claimed invention except for a ground contact and a power contact, the electrical connector comprising corresponding ground and power contacts.

142. Berg et al. discloses ground contacts and power contacts 60 as a means to provide sequential electrical connections during physical insertion of the fiber optic module (see column 5, line 62 through column 6, line 34; Figure 8). Berg et al. also discloses that the ground signal is connected first, then the power, and lastly the data signals (between host contacts and module contacts).

143. Lee et al. and Berg et al. are analogous art because they are from the same field of endeavor, that is, optical transceivers.

144. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the means to provide sequential connection/disconnection of Berg et al. with Lee et al.

145. The motivation for doing so would have been to enable an operator to connect or disconnect the transceiver from the host device without having to remove power from the host device and thus simplifying operation of the device.

146. **Claims 139-141 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. as applied to claim 131 above, and further in view of Berg et al.**

147. Regarding claims 139-141, Lee et al. discloses the claimed invention except for a power contact and a ground contact to provide sequential electrical connections/disconnections, the ground contact and power contact respectively comprising a ground pin/pad and a power pin/pad, the ground pin/pad extending beyond (thicker than) the power pin/pad and the power pin/pad extending beyond (thicker than) the array of pins/pads.

148. Berg et al. discloses ground pads and power pads/pins 60 as a means to provide sequential electrical connections during physical insertion of the fiber optic module (see column 5, line 62 through column 6, line 34; Figure 8). It is noted that during physical removal of the module, sequential disconnections occur in the reverse order as the connections. It is also noted that pins and pads are art recognized functional equivalents; the selection of either of these known equivalents would have been within the level of ordinary skill in the art. Berg et al. also discloses that the ground signal is connected first; therefore the ground pads/pins are the longest/thickest since Berg et al. also states that the longest pads are make contact first. Likewise, Berg et al. discloses that the power signal is connected second; therefore, the power

pads/pins are shorter/thinner that the ground pads/pins. Furthermore, Berg et al. discloses that the data signal is connected last; therefore, the array of pads/pins is shortest/thinnest.

149. Lee et al. and Berg et al. are analogous art because they are from the same field of endeavor, that is, optical transceivers.

150. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the means to provide sequential connection/disconnection of Berg et al. with Lee et al.

151. The motivation for doing so would have been to enable an operator to connect or disconnect the transceiver from the host device without having to remove power from the host device and thus simplifying operation of the device.

152. **Claims 149-151 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer as applied to claim 144 above, and further in view of Berg et al.**

153. Regarding claims 149-151, Lee et al. discloses the claimed invention except for a power contact and a ground contact to provide sequential electrical connections/disconnections, the ground contact and power contact respectively comprising a ground pin/pad and a power pin/pad, the ground pin/pad extending beyond (thicker than) the power pin/pad and the power pin/pad extending beyond (thicker than) the array pins/pads.

154. Berg et al. discloses ground pads and power pads/pins 60 as a means to provide sequential electrical connections during physical insertion of the fiber optic module (see column 5, line 62 through column 6, line 34; Figure 8). It is noted that during physical removal of the module, sequential disconnections occur in the reverse order as the connections. It is also noted that pins and pads are art recognized functional equivalents; the selection of either of these

known equivalents would have been within the level of ordinary skill in the art. Berg et al. also discloses that the ground signal is connected first; therefore the ground pads/pins are the longest/thickest since Berg et al. also states that the longest pads are make contact first. Likewise, Berg et al. discloses that the power signal is connected second; therefore, the power pads/pins are shorter/thinner that the ground pads/pins. Furthermore, Berg et al. discloses that the data signal is connected last; therefore, the array of pads/pins is shortest/thinnest.

155. Lee et al. and Berg et al. are analogous art because they are from the same field of endeavor, that is, optical transceivers.

156. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the means to provide sequential connection/disconnection of Berg et al. with Lee et al.

157. The motivation for doing so would have been to enable an operator to connect or disconnect the transceiver from the host device without having to remove power from the host device and thus simplifying operation of the device.

158. **Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer as applied to claim 6 above, and further in view of Togami (U.S. Patent 6,533,603).**

159. Regarding claim 23, Lee et al. discloses the claimed invention except for a release lever with a catch to couple to a latch of a module receptacle.

160. Togami discloses a housing 106 comprising a release lever 101 with a catch 111 to couple to a latch 213 of a module receptacle 200 of a host printed circuit board and to retain the fiber optic module therein (see column 5, lines 45-65).

161. Lee et al. and Togami are analogous art because they are from the same field of endeavor, that is, optical transceivers.

162. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the release lever mechanism of Togami with Lee et al.

163. The motivation for doing so would have been to facilitate connection and disconnection of the module from the host system, and also to minimize the force required to do so.

164. **Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer as applied to claim 54 above, and further in view of Togami.**

165. Regarding claim 64, Lee et al. discloses the claimed invention except for a release lever with a catch to couple to a latch of a module receptacle.

166. Togami discloses a housing 106 comprising a release lever 101 with a catch 111 to couple to a latch 213 of a module receptacle 200 of a host printed circuit board and to retain the fiber optic module therein (see column 5, lines 45-65).

167. Lee et al. and Togami are analogous art because they are from the same field of endeavor, that is, optical transceivers.

168. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the release lever mechanism of Togami with Lee et al.

169. The motivation for doing so would have been to facilitate connection and disconnection of the module from the host system, and also to minimize the force required to do so.

170. **Claim 98 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. as applied to claim 97 above, and further in view of Togami.**

171. Regarding claim 98, Lee et al. discloses the claimed invention except for the step of coupling a catch of a release lever into an opening of a latch.

172. Togami discloses a housing 106 comprising a release lever 101 with a catch 111 to couple to a latch 213 of a module receptacle 200 of a host printed circuit board and to retain the fiber optic module therein (see column 5, lines 45-65). Therefore the step of coupling a catch of a release lever with an opening of a latch would have been obvious in order to operate the release lever of Togami.

173. Lee et al. and Togami are analogous art because they are from the same field of endeavor, that is, optical transceivers.

174. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the release lever mechanism of Togami with Lee et al.

175. The motivation for doing so would have been to facilitate connection and disconnection of the module from the host system, and also to minimize the force required to do so.

176. **Claim 118 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. as applied to claim 111 above, and further in view of Togami.**

177. Regarding claim 118, Lee et al. discloses the claimed invention except for a release lever with a catch to couple to a latch of a module receptacle.

178. Togami discloses a housing 106 comprising a release lever 101 with a catch 111 to couple to a latch 213 of a module receptacle 200 of a host printed circuit board and to retain the fiber optic module therein (see column 5, lines 45-65).

179. Lee et al. and Togami are analogous art because they are from the same field of endeavor, that is, optical transceivers.

180. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the release lever mechanism of Togami with Lee et al.

181. The motivation for doing so would have been to facilitate connection and disconnection of the module from the host system, and also to minimize the force required to do so.

182. **Claim 142 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. as applied to claim 131 above, and further in view of Togami.**

183. Regarding claim 142, Lee et al. discloses the claimed invention except for a release lever with a catch to couple to a latch of a module receptacle.

184. Togami discloses a housing 106 comprising a release lever 101 with a catch 111 to couple to a latch 213 of a module receptacle 200 of a host printed circuit board and to retain the fiber optic module therein (see column 5, lines 45-65).

185. Lee et al. and Togami are analogous art because they are from the same field of endeavor, that is, optical transceivers.

186. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the release lever mechanism of Togami with Lee et al.

187. The motivation for doing so would have been to facilitate connection and disconnection of the module from the host system, and also to minimize the force required to do so.

188. **Claim 152 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Luttmer as applied to claim 144 above, and further in view of Togami.**

189. Regarding claim 152, Lee et al. discloses the claimed invention except for a release lever with a catch to couple to a latch of a module receptacle.

190. Togami discloses a housing 106 comprising a release lever 101 with a catch 111 to couple to a latch 213 of a module receptacle 200 of a host printed circuit board and to retain the fiber optic module therein (see column 5, lines 45-65).

191. Lee et al. and Togami are analogous art because they are from the same field of endeavor, that is, optical transceivers.

192. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the release lever mechanism of Togami with Lee et al.

193. The motivation for doing so would have been to facilitate connection and disconnection of the module from the host system, and also to minimize the force required to do so.

Allowable Subject Matter

194. Claims 102-104 are allowed.

195. Claims 36-42, 44-45, 49-53 and 110 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

196. The following is a statement of reasons for the indication of allowable subject matter:

197. Regarding claim 36, the prior art of record does not disclose or suggest, either alone or in combination, the fiber optic module comprising a first guide slot, a first stop slot, and further comprising an elastomer having spaced apart conductors, the elastomer to compress and to electrically couple between the one or more contact pads as claimed in claim 36.

198. Claims 37-41 would be allowable as depending from claim 36.

199. Regarding claim 42, the prior art of record does not disclose or suggest, either alone or in combination, the fiber optic module comprising a first guide slot, a first stop slot and further

comprising a compression stop to prevent over-compression of the elastomer. Note also Paragraph 6 above.

200. Regarding claim 44, the prior art of record does not disclose or suggest, either alone or in combination, the fiber optic module comprising a first guide slot, a first stop slot, a second guide slot, a second stop slot, and further comprising an elastomer having compressible spaced apart conductors, the elastomer to compress and to electrically couple between the one or more contact pads as claimed in claim 44.

201. Claim 45 would be allowable as depending from claim 44.

202. Regarding claims 49 and 52, the prior art of record does not disclose or suggest, either alone or in combination, the fiber optic module comprising a housing, the housing including a first guide tab, a second guide tab, and further comprising an elastomer having spaced apart conductors, the elastomer to compress and to electrically couple between the one or more contact pads as claimed in claim 47.

203. Claims 50 and 51 would be allowable as depending from claim 49.

204. Claim 53 would be allowable as depending from claim 52.

205. Regarding claim 102, the prior art of record does not disclose or suggest, either alone or in combination, a method of engaging a fiber optic module into a host system, the method comprising the steps of engaging a pair of guide tabs of the fiber optic module with a pair of guide rails; sliding the guide tabs along the guide rails, and further comprising the steps of moving the guide rails and the fiber optic module closer to a plane of a host printed circuit board and compressing an elastomer between module contacts and host contacts.

206. Claims 103 and 104 would be allowable as depending from claim 102.

207. Regarding claim 110, the prior art of record does not disclose or suggest, either alone or in combination all of the limitations of claim 108 and further wherein the ground contact and the power contact of the module receptacle are sockets.

Conclusion

208. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

209. Any inquiry concerning the merits of this communication should be directed to Examiner Sarah Song at telephone number 571-272-2359. Any inquiry of a general or clerical nature, or relating to the status of this application or proceeding should be directed to the receptionist at telephone number 571-272-1562 or to the technical support staff supervisor at telephone number 571-272-1615.

Sarah Song
Patent Examiner
Group Art Unit 2874